I am in complete agreement as to the desirability of spinal puncture in these cases, both for prognosis and treatment. My conception of the physiology and pathology of increased spinal fluid pressure is as follows: The cerebrospinal fluid has a circulation of its own. It is secreted by the choroid plexi of the ventricles, passes out of the ventricular system into the subarachnoid space and is absorbed back into the venous system mainly through the pacchionian granulations near the sagittal sinus. With edema, due to lacerated brain, there is an increase in the bulk of the brain tissue and this interferes with the circulation of the fluid, but secretion goes on without interruption. Therefore there is an increased amount of cerebrospinal fluid in the subarachnoid spaces, and drainage relieves this situation. Sometimes there are lacerations of the arachnoid membrane, so that the fluid gets into the subdural space, where no fluid belongs, and it is in these cases that spinal puncture gives a temporary favorable result with rather early recurrence of the symptoms of pressure. This condition calls for drainage by way of a subtemporal craniotomy.

Operation, aside from the elevation of depressed fractures, is indicated for the condition just described, for intracranial hemorrhage, and in certain cases showing evidences of localized brain injury in which the history is so deficient that it is impossible to be sure whether the signs, a partial hemiplegia, for example, came on immediately after the injury or some hours later. In the first case the pathology is localized laceration of the brain, and in the second it is probably hemorrhage. I do not hesitate to explore in such a situation, as a negative exploration is entirely harmless and one cannot afford to run any risk of overlooking a middle meningeal hemorrhage. Operative procedures are, therefore, designed to remove something, either trapped cerebrospinal fluid or blood-clot, and to afford drainage. Doctor Naffziger called attention to this fact years ago. I object to the word "decompression" as applied to these operations, for it intimates that a defect is being made in the skull and dura to relieve increased intracranial pressure, and it is my experience that such decompressions are worthless in the treatment of injuries of the brain.

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Mark Albert Glaser, M. D. (1118 Roosevelt Building, Los Angeles).—Doctor Morrissey has given us an excellent résumé for the treatment of head injuries. Brain injury in the majority of the cases is far more important than skull damage. Nevertheless, when the skull fracture involves the orbit, cribriform plate, frontal sinus, mastoid, petrous portion of the temporal bone, or the foramen magnum certain sequelae may occur which require specific treatment. The patient with acute head injury is usually in shock and, as Doctor Morrissey has mentioned, shock treatment is far more essential than early x-rays.

Acute increased intracranial pressure arises from either brain edema or brain hemorrhage. These we must differentiate. If brain hemorrhage is present and the symptoms increase, operative intervention is necessary. If the symptomatology is caused by generalized brain edema, dehydration methods are instituted. It is extremely important to record blood pressures every twenty to thirty minutes, and pulse every ten to fifteen minutes for the first twenty-four to thirty-six hours. It has been my custom in acute head injuries to use 50 cubic centimeters of 50 per cent glucose intravenously every four to six hours, depending upon the symptomatology of the patient. In addition, I have found it quite advantageous to reduce the fluid intake to 600 cubic centimeters. This reduction of fluid intake may be safely carried out for two to three days—the usual length of the critical period. Magnesium sulphate retention enemas may also be used in conjunction with the above dehydration methods. By following this scheme, I have rarely carried out a subtemporal decompression and have reduced the use of spinal puncture to a minimum. Some neurological surgeons feel that bloody spinal fluid should be drained to prevent blockage of the subarachnoid space. In my experience, cases do well without this form of therapy. I do not carry out routine spinal puncture, but utilize it only when other methods of dehydration fail.

If a subtemporal decompression is carried out for acute brain edema, it is important to place a rubber drain in the subarachnoid space so as to permit drainage of the cerebrospinal fluid. The amount of fluid lost by drainage is far more efficacious than the small space increase afforded by a decompression.

Patients receiving a severe cerebral concussion form the greatest percentage of head injuries. These patients, in addition to being the most frequent, present the greatest number of symptoms and prolong such symptoms as headaches, "giddiness," nervousness, irritability, and mental changes over longer periods of time. These patients are frequently considered malingerers, whereas in reality their cerebral damage is extensive.

Cerebral concussion causes punctate hemorrhages within the brain substance which may later result in arachnoid adhesions or ventricular distortion. Many of these can be clearly demonstrated by encephalograms, or a vestibular examination. Rest, sedatives, or the injection of air are the therapeutic measures of choice. Improper treatment of these cases not only prolongs the disability, but aids greatly in establishing post-traumatic symptoms.

I find otoscopic examination more important than ophthalmoscopic examination. Of course, one would not look into an ear with free-flowing blood, but if blood is absent externally, the otoscope examination frequently reveals a few scales of dried blood with a ruptured tympanic membrane, or a bluish-green membrane discolored by hemorrhage posteriorly. This naturally would presuppose a basal skull fracture.

Vestibular examination is of great value. By means of these tests, the drainage of the eighth nerve can be determined as well as central brain damage.

The treatment of head injuries is complex. One could talk for hours without covering the entire subject, but I certainly wish to congratulate Doctor Morrissey upon the concise and practical presentation of his paper.

❦

Doctor Morrissey (Closing).—I wish to thank both Doctor Towne and Doctor Glaser for discussion of my paper, as in so doing they added important points that it was impossible for me to bring out in the time allotted.

NEPHROPTOSIS—ITS DIAGNOSIS AND TREATMENT*

By Jay J. Crane, M. D.
Los Angeles

Discussion *by William E. Stevens, M. D., San Francisco; H. A. Rosenkranz, M. D., Los Angeles.*

SINCE most of the surgery of today upon the genito-urinary tract is being done to relieve urinary stasis, the most common predisposing cause of urinary infection and kidney destruction, the writer wishes to demonstrate that abnormal renal mobility produces urinary stasis and that such a stasis can, in the majority of cases, only be relieved by renal suspension.

Because a few years ago overenthusiasm for the surgical procedure of kidney fixation was general and because suspensions were done on all provocations, with many failures, is not sufficient

* Read before the Urology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

reason to condemn the operation today as a means of offering relief to those who suffer as a result of urinary stasis due to this cause. Especially is this true when we consider the improved urological instruments at our command at this time, which can be of aid in making our diagnosis. With our modern facilities we can accurately demonstrate floating kidneys as well as determine the nature of infection and the degree of kidney destruction. This information was not at the command of all surgeons a generation ago. Thus many an anchored kidney did not relieve the symptoms which were due to pathology located elsewhere. The operation, therefore, fell into disrepute only to be revived and used now in selected cases and not as a cure-all procedure. The writer believes the pendulum is swinging from the ultra-conservative surgeon who fails to provide any form of treatment for these patients to those who believe, as do most of the modern-day urologists, that renal destruction caused by abnormal kidney mobility often can be prevented by applying our present-day diagnostic methods and treatment. The writer is not advising that every floating kidney found be anchored. He is only asking that the patients in whom there is objective evidence of a lesion, the result of nephroptosis as told with the cystoscope and x-ray and whose pain is reproduced by pyelograms, be suspended surgically or treated palliatively to relieve the urinary stasis and the resultant symptoms. Therefore, in this paper I shall limit myself to acquired kidney displacements as found to be the cause of urinary stasis by the aid of the cystoscope and x-ray.

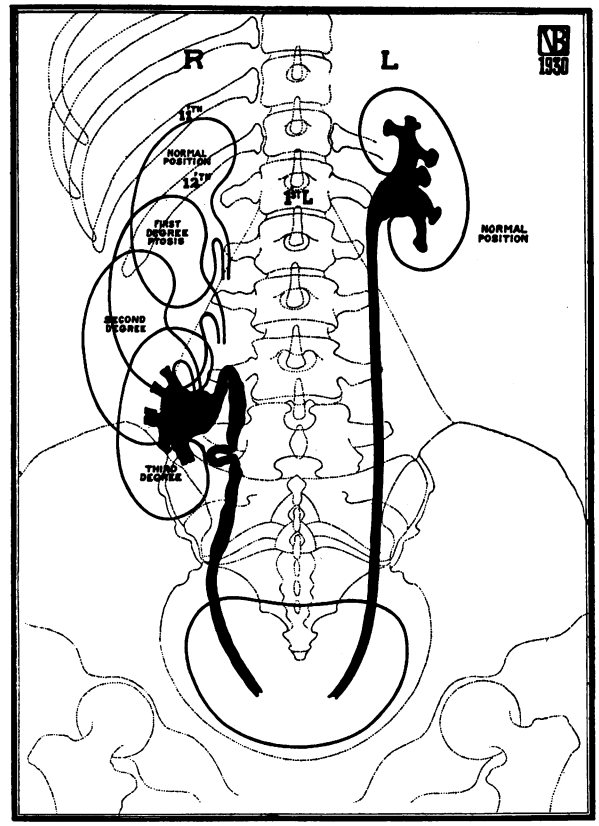

Fig. 1.—Schematic drawing showing the degrees of ptosis of the kidney.

SYMPTOMS

To mention all of the various symptoms that have been attributed to renal mobility is beyond the scope of this paper. It is sufficient to say that the symptoms may or may not be directly referable to the kidney. Frequent attacks of cystitis, as the result of a primary kidney infection with pain of an aching character over the affected side, have been by far the most pronounced individual symptoms.

Gastro-intestinal symptoms such as indigestion, constipation and pain over the areas of the gall-bladder and appendix were frequently encountered in these patients. In fact, so marked were these symptoms in some cases that the patients had had one or more intra-abdominal operations without relief of the symptoms. Nervous symptoms from insanity requiring hospital confinement down to simple hysteria were noted in a few instances. The former usually were greatly improved when the kidney was held in place permanently.

Because there are many cases of renal mobility in which the kidneys cannot be palpated we have come to depend more upon the x-ray findings, with the patient in the erect position, and the kidney pelvis and ureter filled with an opaque solution, than we have on palpation to determine the exact location of the kidney. By this means we also have been able to determine the degrees of hydronephrosis present, since that complication is a major indication for suspending the kidney surgically. The schematic drawing shows the degrees of kidney mobility:

1. First degree when the pelvis rests opposite the third lumbar vertebra.
2. Second degree when the pelvis rests opposite the fourth lumbar vertebra.
3. Third degree when the pelvis rests opposite or below the fifth lumbar vertebra.

DIAGNOSIS

The diagnosis is made upon the subjective symptoms and the finding sometimes by palpation of a freely movable kidney, plus the objective evidence of pathology as demonstrated with the x-ray and cystoscope and the reproduction of the pain by injection of pyelographic fluid. It must be remembered in this connection that a floating kidney may also be tuberculous and for this reason careful urinalysis must be done on every case.

The roentgen ray and pyelograms will usually demonstrate calculi or newgrowths. Renal ectopia or the congenital condition, in which the kidney is held in an abnormal position by anomalous blood vessels, must not be confused with the acquired floating kidney because the ectopic kidney cannot be put into a normal position on account of its anomalous blood supply. To further rule out ectopic kidneys the routine prone and upright pyelograms will usually demonstrate whether or not the kidney will return to its normal position before treatment is introduced. Of course, gastro-

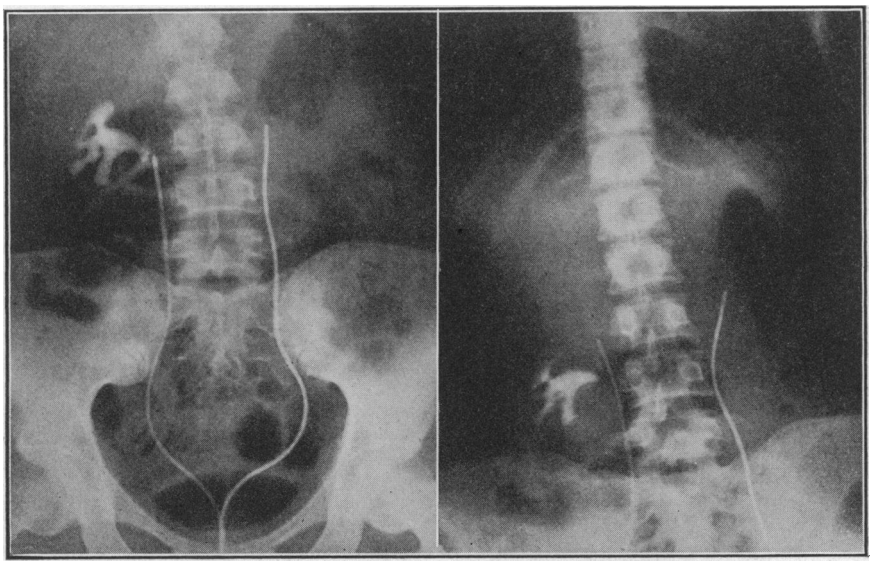

Fig. 2 (Case 4).—Third degree ptosis with twisting of ureter. Prone and standing positions.

intestinal pathology must be ruled out by routine studies. However, a motile kidney may exist in conjunction with gastric or duodenal ulcers as well as with any other pathological condition within the abdominal cavity. When such occurs it becomes necessary to determine which condition is responsible for the major symptoms. This latter can only be accomplished by the most careful, unbiased observation which includes a complete kidney study.

TREATMENT

The treatment consists of palliative and operative measures. The writer believes that all kidneys of a second and third degree ptosis should be surgically suspended, unless there is some contraindication which would prevent any semi-elective operation being done upon the patient, leaving the palliative treatment for the mild cases in which the abdominal supports completely relieve the symptoms.

On these points B. A. Thomas states:

"Palliative treatment is indicated in mild cases, particularly those associated with general visceroptosis, when, in a life of leisure, the subjective symptoms are relieved by rest or abdominal supports, when by periodic urologic checkups there is no development or progression of hydronephrosis or infection; also in severe neurasthenia with no symptoms referable to the kidneys, although Suckling and Billington have reported many cases of insanity cured by fixation.

"Palliative treatment is contraindicated: (1) when any subjective symptoms, even in the presence of general visceroptosis, are not completely relieved by supportive appliances; (2) when the threat of renal damage from urinary retention (hydronephrosis) and infection is uncontrolled by apparatus; (3) when severe pyelitis, pyelonephritis, pyonephrosis, calculus or tumor coexist; (4) when a rotation of the kidney, torsion of the pedicle or fixation of a kinked ureter is present; (5) when harmful traction is exerted on other organs, as on the stomach, intestines, and liver; (6) when the kidney is movable to more than the first degree; (7) when residence in a foreign or uncivilized country becomes obligatory; and (8) when the patient is a manual laborer or in indigent circumstances."

The surgical technique we have been using is that described by Kelly and Burnam. It consists of fixing the kidney by way of the lumbar route, well up under the twelfth rib by direct suture with No. 3 chromic catgut. The posterior kidney surface is likewise fixed to the lumbar muscles with the same suture material. Three sutures are usu-

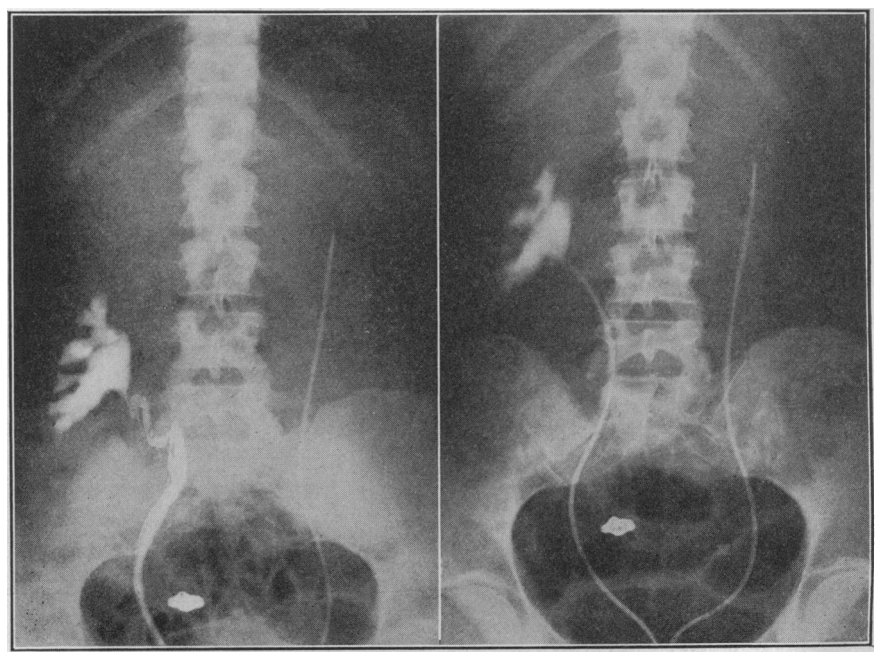

Fig. 3 (Case 28).—Third degree ptosis of the right kidney. Shown in prone and standing positions.

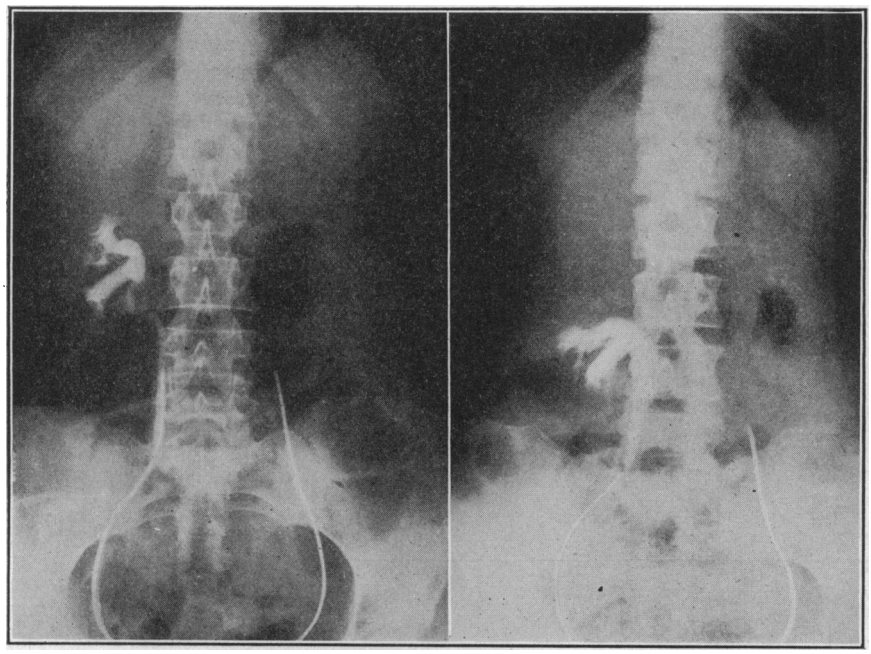

Fig. 4 (Case 41).—Right kidney easily palpable as a tumor mass in midline of abdomen. Also note low position of kidney in prone position.

ally employed between which the capsule of the kidney is split and stripped back for a short distance.

Westlake Professional Building.

DISCUSSION

WILLIAM E. STEVENS, M. D. (870 Market Street, San Francisco).—The fact is not generally recognized except by urologists that nephroptosis is a very common condition, especially in women. Subjective symptoms are not infrequently absent notwithstanding the presence of marked displacement of the kidneys and kinking of the ureters. The majority of patients, however, complain of pain and frequent urination. A review of eighty of our cases of nephroptosis showed that the number of patients complaining of pain in the upper or lower abdominal quadrant was about equal to those with pain in the lumbar region. Some of our patients had also undergone abdominal operations because of gastro-intestinal symptoms. Kinking of the ureter was found in 58 per cent of these eighty patients. It occurred on the right side in 70 per cent, on both sides in 20 per cent, and on the left side only in 10 per cent. Blood was found in the urine in 27 per cent. Nine per cent complained of gastro-intestinal symptoms.

Nephroptosis without a kinking of the ureter is sometimes responsible for pain and gastro-intestinal symptoms.

A correct method of examination is important in order to determine the presence of nephroptosis and ureteral kinks. If the symptoms are due to nephroptosis and ureteral kinks, the operative procedure indicated for their relief and, lastly, the probability of cure. After insertion of opaque ureteral catheters we usually obtain stereoscopic pictures with the patient in the flat position. Following injection of the kidneys stereoscopic pictures are taken with the patient in both flat and Trendelenburg positions. These films are then developed and if satisfactory the kidneys are again injected, the catheters withdrawn and pictures obtained with the patient in the upright position. It is a good plan to take the last picture ten minutes later in order to ascertain if the kidney pelves have completely emptied. O'Conor has recently emphasized the importance of the emptying time of the pelves as an indication of the type of procedure to be employed in the treatment of these cases.

I do not believe that faulty operative technique or the selection of improper cases were the only causes for failure to relieve symptoms, with consequent abandonment of nephropexy after its former period of popularity. Many skilled operators failed to obtain satisfactory results in patients who were apparently ideal for this operation. Vermooten has recently suggested that obstruction in the lower portion of the ureter may be present in some cases. He calls attention to the fact that the latter condition will produce elongation, tortuosity and kinking of the ureter and consequent hydronephrosis.

Doctor Crane is to be congratulated on his excellent results and I agree with him that nephropexy, together with whatever additional operative procedures may be necessary to remove obstructions and straighten out the ureters regardless of location, is indicated in all properly selected cases.

H. A. ROSENKRANZ, M. D. (1024 Story Building, Los Angeles).—I have followed with much interest at the Los Angeles County General Hospital the large series of nephropexies that Doctor Crane has performed and feel that he has done much to bring back to its proper place in the southland the operation of nephropexy and the allied procedures so aptly emphasized by Doctor Stevens. Doctor Mathé's excellent monographs on this subject during the past seven years are also to be commended for influencing the good resulting from this operation. Influenced by Israel of Berlin, who used to do only about three suspensions per year, I long ago adopted a conservative attitude toward this operation. Results obtained during the past few years have, however, shown me definitely that I have been too conservative.

As regards palliation in selected cases I may mention a physician with extreme third degree bilateral nephroptosis who has played golf regularly for four years with the aid of a suitable support.

I would like to emphasize the value of doing a suspension on almost all kidneys that are operated upon in which it has been necessary to so thoroughly free the organ that its natural supports have been severed.

THE INTERNAL RING IN OBLIQUE INGUINAL HERNIA*

By ALBERT R. DICKSON, M. D.
Los Angeles

DISCUSSION *by W. S. Kiskadden, M. D., Los Angeles; O. O. Witherbee, M. D., Los Angeles.*

IT may seem to some that it is a waste of time to bring up for discussion a subject apparently so well settled and standardized as that of oblique inguinal hernia. The Bassini operation, or some modification, is apparently still the technique selected by the great majority of surgeons for repair of the inguinal canal. Of late the imbri-

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